

## EH Resident Competency 1.18

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**Competency 1.18** EH Residents shall demonstrate the ability to recognize fall hazards and identify the appropriate protective measures and/or systems.

### 1. Supporting Knowledge and Skills

- a. Describe the requirements for using fall protection equipment.
- b. Identify the types of fall protection systems/gear.
- c. Given a piece of fall protection equipment, identify the inspection requirements, testing/load ratings, and user training required.

### 2. Self-Study Activities (corresponding to the intent of the above competency)

Below are two web sites containing many of the references you may need.

| Web Sites                     |   |  |
|-------------------------------|---|--|
| Organization                  | Site Location   | Notes                                  |
| Department of Energy          | <a href="http://wastenot.inel.gov/cted/stdguido.html">http://wastenot.inel.gov/cted/stdguido.html</a> | DOE Standards, Guides, and Orders      |
| OSHA                          | <a href="http://www.osha-slc.gov/">http://www.osha-slc.gov/</a>                                       | OSHA documents and search engine       |
| U.S. House of Representatives | <a href="http://law.house.gov/cfr.htm">http://law.house.gov/cfr.htm</a>                               | Searchable Code of Federal Regulations |

**Review** 29 CFR 1910.66, Appendix C, *Personal fall arrest system*.

**Review** 29 CFR 1926.500, *Guardrails, handrails, and covers*.

**Review** 29 CFR 1926.100, *Head protection*.

**Review** 29 CFR 1926.104, *Safety belts, lifelines, and lanyards*.

**Review** 29 CFR 1926.105, *Safety nets*.

**Refer** to any available materials in completing the following exercises.

EXERCISE 1.18-A When are safety nets required?

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EXERCISE 1.18-B Identify at least four of the most common types of fall protection systems/gear.

EXERCISE 1.18-C Select one or more pieces of fall protection equipment used at your site or facility and complete the following matrix.

| Fall Protection Equipment |                         |                     |                        |       |
|---------------------------|-------------------------|---------------------|------------------------|-------|
| Equipment                 | Inspection Requirements | Testing/Load Rating | User Training Required | Notes |
|                           |                         |                     |                        |       |
|                           |                         |                     |                        |       |

EXERCISE 1.18-D Define the following terms:

- Anchorage
- Deceleration device
- Free fall
- Personal fall arrest system

### 3. Summary

The Bureau of Labor Statistics reports that 8% of all occupational fatalities in 1986 were due to falls. Falls are one of the leading causes of traumatic occupational death. A NIOSH analysis of death certificates from work related injuries over a 10-year period has shown falls to be the leading cause of work-related death among construction workers and one of the major causes of injury for the same group. OSHA estimates at least 68,000 injuries occur in the construction industry alone due to falls.

“... a number of human and equipment-related issues must be addressed to protect employees from fall hazards. Among those issues are the following:

- The need to know when protection is required;
- The election of fall protection systems which are appropriate for given situations;
- The proper construction and installation of safety systems;
- The proper supervision of employees;
- The implementation of safe work procedures; and
- The proper training in the selection, use, and maintenance of fall protection systems.”

29 CFR Part 1910 and 1926, “Safety Standards for Fall Protection in the Construction Industry”

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### 4. Exercise Solutions

EXERCISE 1.18-A When are safety nets required?

ANSWER 1.18-A “Safety nets shall be provided when workplaces are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.” 29 CFR 1926.105(a).

EXERCISE 1.18-B Identify at least four of the most common types of fall protection systems/gear.

ANSWER 1.18-B Your answer should include at least four of the following:

- Safety nets
- Safety belts
- Lineman’s body belts
- Body harness
- Safety straps
- Lanyards
- Lifelines
- Guardrails
- Handrails

EXERCISE 1.18-C Select one or more pieces of fall protection equipment used at your site or facility and complete the following matrix.

ANSWER 1.18-C Your answer will vary depending upon the equipment in use on your site. An example is provided of a typical response. You may wish to complete the matrix for all identified fall protection equipment to use as a reference on your site.

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| Fall Protection Equipment |                                    |   |   |   |
|---------------------------|------------------------------------|---|---|---|
| Equipment                 | Inspection Requirements            | Testing/Load Rating   | User Training Required                      | Notes   |
| Safety Net                | Immediately prior to and after use | <ul style="list-style-type: none"><li>• 17,500 foot-pounds minimum impact resistance</li><li>• Edge ropes provide a minimum breaking strength of 5,000 pounds</li></ul> | Training required only for net installation | <ul style="list-style-type: none"><li>• Must be certified by the manufacturer and bear a label of proof test</li><li>• Forged steel safety hooks or shackles must be used to support it</li><li>• Connections between net panels develop the full strength of the net</li></ul> |

EXERCISE 1.18-D Define the following terms:

- Anchorage
- Deceleration device
- Free fall
- Personal fall arrest system

ANSWER 1.18-D The following definitions are from 29 CFR 1910.66, Appendix C, "Personal fall arrest system."

Anchorage - a secure point of attachment for lifelines, lanyards, or deceleration devices, that is independent of the means of supporting or suspending the employee.

Deceleration device - any mechanism, such as a rope grab, ripstitch lanyard, specially woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline/lanyard, that serves to dissipate a substantial amount of energy during a fall arrest or otherwise limits the energy imposed on an employee during fall arrest.

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Free fall - the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Personal fall arrest system - a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, and a body belt or body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.